T10/05-416r0 SAS 2.0 – Zone Check and Route Table Clarification

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When Are Zone Checks Required?

- Zone Checks May Be Not Required at All Points
  - Checks Performed When All Group Information is Known

- Zone Checks are Not Required at Intermediate Points Inside Zoning Service Delivery Subsystem (ZSDS)
  - All Expanders in ZSDS can perform their own Zoning Check

- Zone Checks Performed on Participating Subtractive Phys Could be Incorrect
  - Actual Destination Group ID Unknown
Subtractive Route with Unnecessary Zoning Check

- Destination Group ID is Group ID of the Subtractive PHY
  - All opens from Expander 1 to Expander 2 allowed by definition of Group 1
  - Zoning check of Open from A to B unnecessary in Expander 1

Zone Permission Table
(8,1) = 1
(8,9) = 1
Subtractive Route with Incorrect Zoning Check Decision

- Destination Group ID is Group ID of the Subtractive PHY
  - For a Participating Subtractive PHY, this may not be the group of the Destination Device
  - Open from A to B will fail with OPEN_REJECT(ZONE_VIOLATION) in Expander 1

Zone Permission Table

\[(8,9) = 1\]
\[(8,10) = 0\]
Subtractive Routing Example

Subtractive Routing is enabled. ECM destination address B not found by direct and table routing method, subtractive routing is used.

OPEN is not rejected by Expander 1

*From 05-186R1 SAS-2: Zoning and Access Control
Read trusted as participating and untrusted as non-participating above
### When Are Zone Checks Required?

<table>
<thead>
<tr>
<th>Source Phy Participating, Non-Participating</th>
<th>Destination Phy Participating, Non-Participating</th>
<th>Destination Route Type (Direct, Table, Subtractive)</th>
<th>Zone Check Required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating</td>
<td>Participating</td>
<td>Any</td>
<td>No</td>
</tr>
<tr>
<td>Participating</td>
<td>Non-Participating</td>
<td>Any</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Participating</td>
<td>Non-Participating</td>
<td>Any</td>
<td>Yes</td>
</tr>
<tr>
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<td>Participating</td>
<td>Direct</td>
<td>Yes</td>
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<tr>
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<td>Participating</td>
<td>Table</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-Participating</td>
<td>Participating</td>
<td>Subtractive</td>
<td>No</td>
</tr>
</tbody>
</table>
Zone Route Table & Discovery Conclusion

- Zoning Route Table May Include Only Devices “Below”
  - Devices Attached to Subtractive Ports use Group of Subtractive Port
  - Final Group of Device connected via Subtractive Ports not known until boundary of Zoning Service Delivery Subsystem

- Discovery Algorithms Do Not Need to Change from SAS 1.1
  - Except to Add Group of Each Device to the table